



**Process
Insights™**

Premium Insights Into Process



SPECIALTY GAS MONITORING

WITH MASS SPECTROMETRY
AND CAVITY RING-DOWN
SPECTROSCOPY

2ND EDITION

HIGH-PERFORMANCE
GAS ANALYZERS FOR
SPECIALTY GAS APPLICATIONS

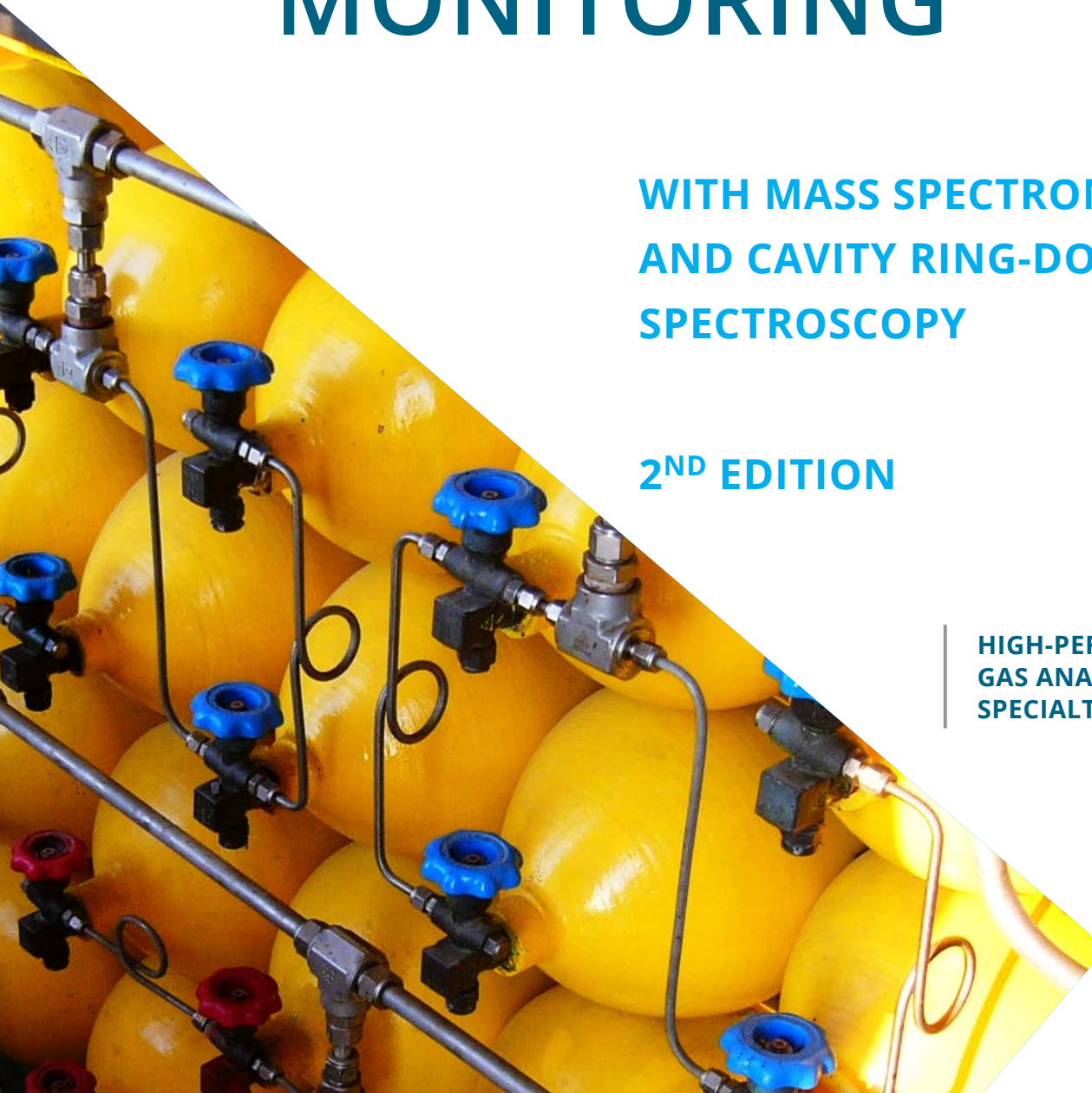


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Company Overview

Process Insights is a global organization comprised of dedicated individuals who are passionate about promoting safer process control. Our presence spans across the world, with our innovative analytical instrumentation and process automation products and solutions making a positive impact in various industries. We are committed to manufacturing and developing cutting-edge innovations that empower our customers to create better products and services while safeguarding the environment. With a focus on strategic and global expansion, we are constantly seeking new opportunities across the value chain, benefiting not only our customers but also our channel partners and suppliers. We understand the criticality of protecting precious and limited resources in your processes, and we are here to support you.

Process Insights plays a pivotal role in optimizing processes and ensuring safety. Our solutions offer exceptional accuracy, surpassing the competition and ensuring the safety of your plant, processes, environment, and personnel. The speed of our continuous, real-time analytical solutions simplifies time-sensitive experiments and simulations. By providing real-time data on gas composition, our gas analysis solutions enhance process control, leading to increased efficiency, reduced waste, and improved product quality. Additionally, our solutions contribute to enhanced safety by detecting potentially hazardous gases, thereby preventing accidents, and protecting both personnel and equipment. We also facilitate regulatory compliance by helping companies meet emissions monitoring and control requirements, ensuring adherence to environmental regulations and avoiding penalties.

Our comprehensive range of analytical instrumentation, applications, systems, and service options ensures that we can tailor a solution that matches your specific needs and budget. We provide you with the most optimal and reliable process analysis solution for your application.

Discover the expansive suite of turnkey analytical solutions and instrumentation offered by Process Insights, catering to a wide range of industrial, high purity, laboratory, and research applications.

Our portfolio encompasses a variety of cutting-edge products, including:

- Dew point moisture analyzers and transmitters
- Oxygen analyzers and safety monitors
- CRDS gas analyzers
- TOC water quality analyzers
- Excimer Total Sulfur-Nitrogen process and lab analyzers
- NIR UV VIS process and lab analyzers
- FTIR FT-NIR process and lab analyzers
- Relative humidity and temperature analyzers
- Chilled mirror dew point analyzers

With our comprehensive portfolio, Process Insights is committed to driving innovation and excellence ensuring that our customers receive the highest level of performance and accuracy in their processes.

Reach out to us today for a complete range of options and let us partner with you in achieving process excellence.

ANALYZER AND TECHNOLOGY OVERVIEW



Cavity Ring-Down Spectroscopy Systems for Purity Analysis

From carbon dioxide for beverages to ammonia for LED manufacturing or xenon for research applications, **Cacvity Ring-Down Spectroscopy (CRDS)** analyzers are ideal for measuring trace molecules in ultra-high-purity specialty gases.

Process Insights offers ultra-sensitive, highly accurate and easy to use CRDS instruments from its **TIGER OPTICS™** brand. They offer a variety of benefits for specialty gas analysis:

- Optical, non-contact measurement
- High selectivity to minimize background
- High chemical and corrosion resistance
- Excellent sensitivity
- Real-time, 24/7 operation
- Low cost of ownership

Some of the TIGER OPTICS CRDS systems applicable to this catalog are:

Analyzer Model	Impurities	Background Gases
Spark	H ₂ O, CH ₄ , CO, CO ₂	Inert gases, hydrogen, oxygen, noble gases, CO ₂ , fluorocarbons
HALO / HALO 3	H ₂ O, HF, NH ₃ , CO, CO ₂ , N ₂ O	Inert gases, hydrogen, oxygen, noble gases, CO ₂ , N ₂ O, ammonia, hydrides, fluorocarbons
HALO OK	O ₂	Inert gases, hydrogen, noble gases, CO ₂
HALO H2	H ₂	Inert gases, oxygen, noble gases



Spark

Low-cost, ppb to ppm level analyzer



HALO OK

Trace oxygen analyzer



HALO 3

Versatile, high-performance analyzer

Mass Spectrometers for Gas Mixing

Our **EXTREL™ MAX300-LG™** brings an unmatched combination of speed, sensitivity and precision to continuous, quantitative gas analysis.

Based on cutting-edge quadrupole mass spectrometer technology, the MAX300-LG has the dynamic range to measure component concentrations from 100% down to the low parts per billion (ppb) in many gas or vapor samples. It provides a full composition update every few seconds and can analyze multiple sample points in a fully automated analysis routine.

Features and Benefits

- Provides complete quantitative sample composition
- Real-time analysis with updates as fast as 0.4 seconds per chemical
- Multi-port for stream switching capabilities
- Fast clearing times between gas compositions
- Seamless ppm to percent level analysis
- Analysis of inert, hydrocarbon, fluorocarbon and corrosive gases

Technology

Industry-leading 19 mm quadrupole mass filter, combined with state-of-the-art electronics, provides the user with an impressive list of advantages:

- Near-zero mass scale drift for outstanding measurement precision and stability
- Uniform resolution across the entire mass range for ultra-high sensitivity to all compounds
- Extreme resistance to corrosion and contamination for long-term, continuous, low-maintenance operation
- Performance specifications that exceed those common to other mass spectrometers and technologies

Communication & Software

- Questor 5 Control Software
- Tracks and records data
- Automated alarms, validations and calibrations
- Network accessible
- Secure to 21 CFR Part 11
- Ethernet or Serial Modbus, digital I/O, analog I/O, OPC



MAX300-LG
Benchtop Model



MAX300-RTG
Cart or Wall Mount Model

Technology Overview

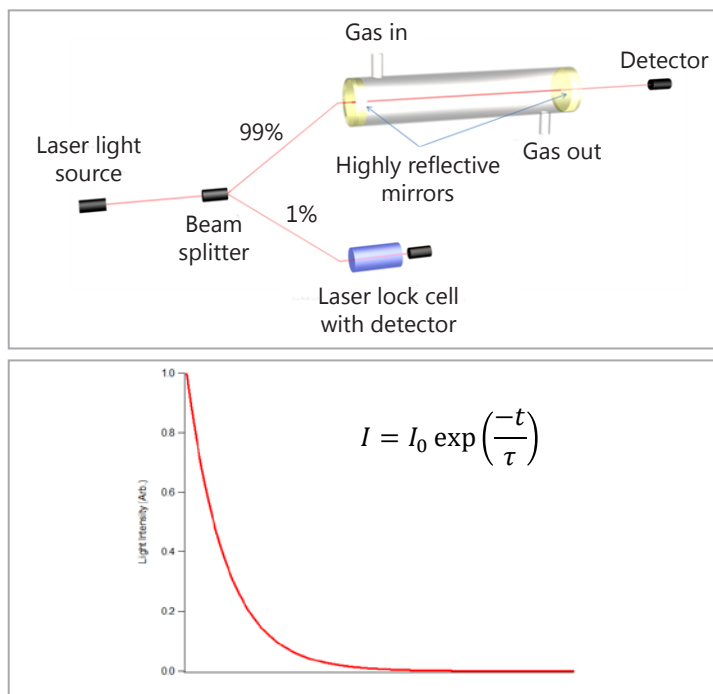
Cavity Ring-Down Spectroscopy (CRDS)

A Continuous Wave (CW) laser emits a directed beam of light into a gas cell with two highly reflective mirrors on either end (optical cavity). The laser wavelength is chosen to be absorbed by the target molecule. The light reflects back and forth between two ultra-high reflective mirrors multiple times, creating a total optical absorption path length of up to 100 kilometers. This long interaction length gives CRDS great sensitivity.

Once the detector “sees” a sufficient level of light energy built up inside the cavity, the light source is turned off quickly, starting the measurement. On each successive pass, a small amount of light emits through the output mirror and is picked up by the detector.

The resulting exponential decay, or “ring-down” is recorded. The decay time or ring-down time is a direct measure of the losses inside the cavity, which includes the absorption of the target molecule.

One key advantage of CRDS is that the ring-down time is independent of laser fluctuations or external background and provides an absolute, stable and extremely sensitive measurement of the target molecule’s concentration.



Quadrupole Mass Spectrometry (QMS)

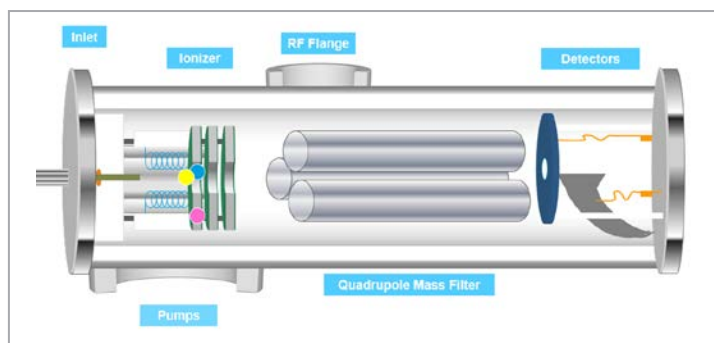
Sample gases are connected to the mass spectrometer either directly or through an option of valves or sample selectors. Sample gas can be pressurized, providing flow through a bypass-T with a restrictive tubing inlet or actively controlled (differentially pumped) to the vacuum system inlet.

A very small amount of gas flows into the vacuum system, containing the mass spectrometer components. These are exposed to a heated, filament-based ionization source. Heating the ionization source minimizes the contamination from gas molecules.

The filaments have a high current applied, generating electrons. These electrons collide with the neutral gas molecules creating positively charged ions.

A series of electrostatic lenses accelerate and focus the ions into a quadrupole mass filter.

Applying a combination of RF and DC voltages to the quadrupole filters the ions based on their mass-to-charge ratios. The now speciated ions are quantified using a combination of faraday plate and/or electron multiplier detector.



PURE GASES



Pure Gases

Air

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus Ultra Zero (Research)	AIR-UZ-XX		Total Hydrocarbons	< 0.1 ppm	300 series brass regulator
			Moisture	< 3 ppm	
			Oxygen	19.5% to 23.5%	
			Carbon Dioxide	< 1 ppm	
			Carbon Monoxide	< 1 ppm	
PurityPlus Zero	AIR-ZE-XX		Total Hydrocarbons	< 1 ppm	300 series brass regulator
			Oxygen	19.5% to 23.5%	
PurityPlus Extra Dry	AIR-ED-XX		Moisture	< 8 ppm	200 series brass regulator
			Oxygen	19.5% to 23.5%	

Ammonia

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus VLSI 4.5 (Liquid Phase)	AMM-VL-XX		Oil	< 0.5 ppm	300 series brass regulator
			Moisture	< 3 ppm	
PurityPlus 2.5 (Liquid Phase)	AMM-25-XX		Total Impurities	< 0.5%	300 series brass regulator

Argon

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 6.0 (Research)	ARG-60-XX	99.9999%	Oxygen	< 0.2 ppm	400 series stainless steel regulator
			Moisture	< 0.2 ppm	
			Nitrogen	< 0.4 ppm	
			Carbon Monoxide	< 0.1 ppm	
			Carbon Dioxide	< 0.1 ppm	
			Total Hydrocarbons	< 0.1 ppm	
PurityPlus 5.5 (Chromatograph)	ARG-55-XX	99.9995%	Oxygen	< 1 ppm	300 series brass regulator
			Moisture	< 1 ppm	
			Nitrogen	< 3 ppm	
			Total Hydrocarbons	< 0.1 ppm	

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

This **Specialty Gas Monitoring** catalog is based on the **PurityPlus Specialty Gases & Equipment Catalog**. **Part Number** refers to the PurityPlus part number, with "XX" referring to the cylinder size.

Pure Gases

Argon (continued)

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus N₂ Free 5.0	ARG-NF-XX	99.999%	Oxygen	< 2 ppm	300 series brass regulator
			Moisture	< 2 ppm	
			Nitrogen	< 3 ppm	
			Total Hydrocarbons	< 0.1 ppm	
PurityPlus 5.0 (Ultra High Purity)	ARG-50-XX	99.999%	Oxygen	< 1 ppm	300 series brass regulator
			Moisture	< 1 ppm	
			Total Hydrocarbons	< 0.5 ppm	
PurityPlus 4.8 (Prepurified)	ARG-48-XX	99.998%	Oxygen	< 5 ppm	300 series brass regulator
			Moisture	< 5 ppm	
			Total Hydrocarbons	< 2 ppm	
PurityPlus Zero 4.8	ARG-ZE-XX	99.998%	Total Hydrocarbons	< 0.5 ppm	300 series brass regulator

Boron Trifluoride

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 2.5 (Chemically Pure)	BTF-25-XX	> 99.5%	Total Impurities	< 0.5%	400 series stainless steel regulator
			CRDS detections possible: Hydrogen Fluoride		

Carbon Dioxide

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0 (Research)	CDI-50-XX	99.999%	Oxygen	< 1 ppm	300 series brass regulator
			Nitrogen	< 1 ppm	
			Carbon Monoxide	< 0.1 ppm	
			Methane	< 0.5 ppm	
			Water	< 2 ppm	
PurityPlus 4.8 (Scientific)	CDI-48-XX	99.998%	Argon + Oxygen	< 2 ppm	300 series brass regulator
			Water	< 3 ppm	
			Carbon Monoxide	< 1 ppm	
			THC (as methane)	< 2 ppm	
PurityPlus Laser 4.5	CDI-45-XX	99.995%	Moisture	< 5 ppm	300 series brass regulator
			Oxygen	< 5 ppm	
			Total Hydrocarbons	< 1 ppm	

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	Measurement possible with Mass Spec
	Measurement possible with either
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Pure Gases

Carbon Dioxide (continued)

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus Coleman 4.0 (Instrument)	CDI-40-XX	99.99%	Moisture	< 10 ppm	300 series brass regulator
			Oxygen	< 20 ppm	
			Nitrogen	< 50 ppm	
PurityPlus Anaerobic 3.0	CDI-30-XX	99.9%	Oxygen	< 20 ppm	200 series brass regulator
PurityPlus 2.8 (Bone Dry)	CDI-30-XX	99.8%	Moisture	< 20 ppm	200 series brass regulator

Carbon Monoxide

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 4.0	CMO-40-XX	99.99%	Nitrogen	< 10 ppm	400 series stainless steel regulator
			Oxygen	< 2 ppm	
			Carbon Dioxide	< 20 ppm	
			Hydrogen	< 10 ppm	
			Total Hydrocarbons	< 5 ppm	
			Moisture	< 5 ppm	
PurityPlus 2.5 (Chemically Pure)	CMO-25-XX	> 99.5%	Total Impurities	< 0.5%	300 series brass regulator
PurityPlus 2.0 (Technical)		99.0%	Total Impurities	< 1.0%	200 series brass regulator

Carbonyl Sulfide

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 3.0	COS-30-XX	99.9%	Oxygen	< 0.01%	400 series stainless steel regulator
			Nitrogen	< 0.03%	
			Moisture	< 0.01%	
			Carbon Dioxide	< 0.03%	
			Hydrogen Sulfide	< 0.01%	

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Pure Gases

Chlorine

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 3.0 (High Purity)	CHL-30-XX	> 99.9%	Total Impurities	< 1000 ppm	400 series stainless steel regulator
			CRDS analysis possible: Moisture		
PurityPlus 2.5 (Chemically Pure)	CHL-25-XX	> 99.5%	Total Impurities	< 0.5%	400 series stainless steel regulator

Deuterium

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0	DEU-50-XX	99.999%	Hydrogen	< 100 ppm	300 series brass regulator
			Oxygen	< 1 ppm	
			Nitrogen	< 1 ppm	
			Moisture	< 1 ppm	
			Deuterium Hydride	< 3000 ppm	
			Total Hydrocarbons	< 1 ppm	
			Carbon Monoxide	< 1 ppm	
			Carbon Dioxide	< 1 ppm	
PurityPlus 4.0	DEU-40-XX	> 99.99%	Total Impurities	< 100 ppm	300 series brass regulator
PurityPlus 2.7	DEU-27-XX	> 99.7%	Total Impurities	< 0.3%	200 series brass regulator

Helium

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 7.0	HEL-70-XX	99.9999%	Oxygen	< 50 ppb	
			Moisture	< 50 ppb	
			Nitrogen	< 50 ppb	
			Total Hydrocarbons	< 20 ppb	
			Carbon Monoxide	< 20 ppb	
			Carbon Dioxide	< 20 ppb	
			Total Impurities	< 100 ppb	

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Pure Gases

Helium (continued)

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
Purity Plus 6.0 (Research)	HEL-60-XX	99.9999%	Oxygen	< 0.2 ppm	400 series stainless steel regulator
			Moisture	< 0.2 ppm	
			Nitrogen	< 0.4 ppm	
			Total Hydrocarbons	< 0.1 ppm	
			Carbon Monoxide	< 0.1 ppm	
			Carbon Dioxide	< 0.1 ppm	
			Total Impurities	< 1 ppm	
PurityPlus 5.5 (Chromatograph)	HEL-55-XX	99.9995%	Oxygen	< 1 ppm	300 series brass regulator
			Moisture	< 1 ppm	
			Nitrogen	< 3 ppm	
			Total Hydrocarbons	< 0.5 ppm	
PurityPlus 5.0 (Ultra High Purity)	HEL-50-XX	99.999%	Oxygen	< 1 ppm	300 series brass regulator
			Moisture	< 1 ppm	
			Total Hydrocarbons	< 0.5 ppm	
Purity Plus Zero 4.8	HEL-48-XX	99.998%	Total Hydrocarbons	< 0.5 ppm	300 series brass regulator
PurityPlus 4.7 (Prepurified)	HEL-47-XX	99.997%	Oxygen	< 5 ppm	300 series brass regulator
			Moisture	< 5 ppm	

Hydrogen

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
Purity Plus 6.0 (Research)	HYD-60-XX	99.9996%	Oxygen	< 0.2 ppm	300 series brass regulator
			Water	< 0.5 ppm	
			Nitrogen	< 0.3 ppm	
			Total Hydrocarbons	< 0.1 ppm	
			CO/CO ₂	< 0.1 ppm	
PurityPlus 5.5 (Chromatograph)	HYD-55-XX	99.9995%	Oxygen	< 0.5 ppm	300 series brass regulator
			Water	< 2 ppm	
			Nitrogen	< 2 ppm	
			Methane	< 0.2 ppm	
			Carbon Dioxide	< 0.1 ppm	
			Carbon Monoxide	< 0.2 ppm	

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Pure Gases

Hydrogen (continued)

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0 (Ultra High Purity)	HYD-50-XX	99.999%	Oxygen	< 1 ppm	300 series brass regulator
			Moisture	< 2 ppm	
			Nitrogen	< 5 ppm	
			Total Hydrocarbons	< 0.5 ppm	
PurityPlus Zero 4.5	HYD-45-XX	99.995%	Total Hydrocarbons	< 0.5 ppm	300 series brass regulator
PurityPlus 4.0 (Prepurified)	HYD-40-XX	99.99%	Moisture	< 10 ppm	300 series brass regulator
			Oxygen	< 20 ppm	

Hydrogen Bromide

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 2.8 (Chemically Pure)	HYB-28-XX	> 99.8% Liquid Phase	Total Impurities	< 2000 ppm	400 series stainless steel regulator
			CRDS detection possible: Moisture		

Hydrogen Chloride

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0 (Research)	HCL-50-XX	99.999%	Total Impurities	< 10 ppm	400 series stainless steel regulator
			(Nitrogen		
			Oxygen		
			CO/CO ₂		
			Total Hydrocarbons)		
PurityPlus 4.5	HCL-45-XX	99.995%	Total Impurities	< 50 ppm	400 series stainless steel regulator
			(Nitrogen		
			Oxygen		
			CO/CO ₂		
			Total Hydrocarbons)		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Pure Gases

Hydrogen Chloride (continued)

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 4.0	HCL-40-XX	> 99.99%	Total Impurities	< 100 ppm	400 series stainless steel regulator
			CRDS detections possible:		
			Moisture		
			CO/CO ₂		
PurityPlus 2.0 (Technical)	HCL-20-XX	> 99%	Total Impurities	< 100 ppm	400 series stainless steel regulator
			CRDS detections possible:		
			Moisture		
			CO/CO ₂		

Krypton

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0	KRY-50-XX	99.999%	Nitrogen	< 10 ppm	300 series brass regulator
			Oxygen		
			Hydrogen		
			CO/CO ₂		
			Tetrafluoromethane		
			Total Hydrocarbons		
			Moisture		
			Xenon		
			Total Impurities		
PurityPlus 4.5	KRY-45-XX	99.995%	Nitrogen	< 10 ppm	300 series brass regulator
			Oxygen	< 2 ppm	
			Hydrogen	< 1 ppm	
			CO/CO ₂	< 1 ppm	
			Tetrafluoromethane	< 1 ppm	
			Total Hydrocarbons	< 1 ppm	
			Moisture	< 1 ppm	
			Xenon	< 20 ppm	
Purity Plus 2.0	KRY-20-XX	> 99%	Total Impurities	< 1.0%	300 series brass regulator

	Measurement possible with CRDS
	Measurement possible with Mass Spec
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Pure Gases

Methane

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0 (Research)	MET-50-XX	> 99.999%	Total Impurities	< 10 ppm	300 series brass regulator
			CRDS detection possible: Moisture		
PurityPlus 4.0 (Ultra High Purity)	MET-40-XX	> 99.999%	Total Impurities	< 100 ppm	300 series brass regulator
			CRDS detection possible: Moisture		
Purity Plus 2.0 (Chemically Pure)	MET-20-XX	> 99%	Total Impurities	< 1.0%	200 series regulator
Purity Plus 1.3 (Commercial)	MET-13-XX	> 93%	Total Impurities	< 7.0%	200 series regulator

Neon

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0 (Ultra High Purity)	NEO-50-XX	99.999%	Helium	< 8 ppm	300 series brass regulator
			Nitrogen	< 4 ppm	
			Oxygen	< 1 ppm	
			Moisture	< 1 ppm	
			Hydrogen	< 1 ppm	
			Total Hydrocarbons	< 0.5 ppm	

Nitric Oxide

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 3.0	NOX-30-XX	> 99.9%	Total Impurities	< 1000 ppm	400 series stainless steel regulator
			CRDS detection possible: Moisture		
Purity Plus 2.0 (Chemically Pure)	NOX-20-XX	> 99.0%	Total Impurities	< 1.0%	400 series stainless steel regulator

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Pure Gases

Nitrogen

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 6.0 (Research)	NIT-60-XX	99.9999%	Oxygen	< 0.2 ppm	400 series stainless steel regulator
			Moisture	< 0.2 ppm	
			Total Hydrocarbons	< 0.1 ppm	
			Carbon Monoxide	< 0.1 ppm	
			Carbon Dioxide	< 0.1 ppm	
PurityPlus 5.5 (Chromatograph)	NIT-55-XX	99.9995%	Oxygen	< 1 ppm	300 series brass regulator
			Moisture	< 1 ppm	
			Total Hydrocarbons	< 0.1 ppm	
			Carbon Monoxide	< 1 ppm	
			Carbon Dioxide	< 1 ppm	
PurityPlus 5.0 (Ultra High Purity)	NIT-50-XX	99.999%	Oxygen	< 1 ppm	300 series brass regulator
			Moisture	< 1 ppm	
			Total Hydrocarbons	< 0.5 ppm	
PurityPlus 4.8 (Prepurified)	NIT-48-XX	99.998%	Oxygen	< 5 ppm	300 series brass regulator
			Moisture	< 5 ppm	
Purity Plus Zero 4.8	NIT-48-XX	99.998%	Total Hydrocarbons	< 0.5 ppm	300 series brass regulator
Purity Plus O₂ Free 4.8	NIT-OF-XX	99.998%	Oxygen	< 0.5 ppm	300 series brass regulator

Nitrogen Trifluoride

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 4.0	NTF-40-XX	99.99%	Oxygen/Argon	< 5 ppm	300 series brass regulator
			Nitrogen	< 5 ppm	
			Tetrafluoromethane	< 40 ppm	
			Carbon Dioxide	< 3 ppm	
			Nitrous Oxide	< 3 ppm	
			Sulfur Hexafluoride	< 5 ppm	
			Moisture	< 1 ppm	
			Hydrogen Fluoride	< 1 ppm	
			Carbon Monoxide	< 1 ppm	
			Methane	< 1 ppm	

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Pure Gases

Nitrous Oxide

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus VLSI 5.0	N2O-VL-XX	99.999%	Nitrogen	< 5 ppm	400 series stainless steel regulator
			Oxygen	< 2 ppm	
			Carbon Dioxide	< 2 ppm	
			Total Hydrocarbons	< 1 ppm	
			Moisture	< 3 ppm	
			Carbon Monoxide	< 1 ppm	
			Ammonia	< 5 ppm	
			Nitric Oxide	< 0.5 ppm	
			Nitrogen Dioxide	< 0.5 ppm	
			Halogens	< 0.5 ppm	
PurityPlus 4.5	N2O-45-XX	99.995%	Oxygen	< 5 ppm	300 series brass regulator
			Moisture	< 5 ppm	308 series heated regulator
			Nitrogen	< 20 ppm	
			Total Hydrocarbons	< 5 ppm	
			CO/CO ₂	< 5 ppm	
PurityPlus 3.0	N2O-30-XX	99.9%	Nitrogen	< 400 ppm	200 series brass regulator
			Oxygen	< 100 ppm	308 series heated regulator
			Carbon Dioxide	< 250 ppm	
			Total Hydrocarbons	< 30 ppm	
			Moisture	< 50 ppm	
			Carbon Monoxide	< 50 ppm	
PurityPlus AA 2.6	N2O-26-XX	99.9%	Moisture	< 30 ppm	200 series brass regulator
			Oxygen/Nitrogen	< 2000 ppm	308 series heated regulator

Octafluorocyclobutane (R318)

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0	318-50-XX	99.999% Liquid Phase	Oxygen	< 1 ppmw	402 series stainless steel regulator
			Nitrogen	< 3 ppmw	302 series brass regulator 202 series brass regulator
			Moisture	< 1 ppmw	
			Other	< 4 ppmw	
			Fluorocarbons	< 0.1 ppmw	
			Acidity	< 0.1 ppmw	
			Total Impurities	10 ppm	

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Pure Gases

Octafluorocyclobutane (R318, continued)

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 3.8	318-38-XX	99.98% Liquid Phase	Oxygen	< 20 ppmv	402 series stainless steel regulator 302 series brass regulator 202 series brass regulator
			Nitrogen	< 80 ppmv	
			Moisture	< 10 ppmv	
			Tetrafluoromethane	< 50 ppmv	
			Acidity	< 0.1 ppmw	
			Total Impurities	200 ppm	
PurityPlus 3.0	318-30-XX	99.9% Liquid Phase	Air (N ₂ , O ₂ , CO, CO ₂)	< 300 ppmv	402 series stainless steel regulator 302 series brass regulator 202 series brass regulator
			Moisture	< 10 ppmv	
			Other Organics	< 1000 ppmv	
			Total Impurities	< 1000 ppmv	
			Other CRDS detection possible: Hydrogen Fluoride		

Octafluoropropane (HC-218)

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0	OFP-50-XX	99.999%	Organic Impurities	< 10 ppm	3700 HP series LP gas regulator
			Moisture		
			Carbon Monoxide		
			Carbon Dioxide		
			Nitrogen/Oxygen		
			Acidity (as HF)		
PurityPlus 3.0	OFP-30-XX	> 99.9%	Total Impurities	< 1000 ppm	3700 HP series LP gas regulator

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Pure Gases

Oxygen

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0 (Research)	OXY-50-XX	99.999%	Moisture	< 1 ppm	300 series brass regulator
			Nitrogen	< 5 ppm	
			Total Hydrocarbons	< 0.5 ppm	
			CO/CO ₂	< 1 ppm	
			Argon	< 5 ppm	
PurityPlus 4.3 (Ultra High Purity)	OXY-43-XX	99.993%	Moisture	< 3 ppm	300 series brass regulator
			Nitrogen	< 10 ppm	
			Total Hydrocarbons	< 0.5 ppm	
PurityPlus Zero 2.8	OXY-28-XX	99.8%	Total Hydrocarbons	< 0.5 ppm	300 series regulator
PurityPlus Extra Dry 2.6	OXY-26-XX	99.6%	Moisture	< 10 ppm	200 series regulator

Sulfur Hexafluoride

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0	SF6-50-XX	99.999%	Air	< 6 ppm	300 series brass regulator
			Tetrafluoromethane	< 2 ppm	
			Moisture	< 2 ppm	
PurityPlus 4.0	SF6-40-XX	99.99%	Air	< 50 ppm	300 series brass regulator
			Tetrafluoromethane	< 40 ppm	
			Moisture	< 5 ppm	
			Oil	< 2 ppm	
			Acidity (as HF)	< 0.3 ppm	
PurityPlus 3.0	SF6-30-XX	99.9%	Air	< 300 ppm	200 series brass regulator
			Tetrafluoromethane	< 300 ppm	
			Moisture	< 8 ppm	
			Oil	< 5 ppm	
			Acidity (as HF)	< 0.3 ppm	

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Pure Gases

Tetrafluoromethane

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0	TFM-50-XX	99.999%	Oxygen/Argon	< 1 ppm	300 series brass regulator
			Nitrogen	< 4 ppm	
			CO/CO ₂	< 1 ppm	
			Other Halocarbons	< 2 ppm	
			Sulfur Hexafluoride	< 1 ppm	
			Moisture	< 1 ppm	
			Acidity (as HF)	< 0.1 ppmw	
PurityPlus 4.0	TFM-40-XX	99.99%	Oxygen/Argon	< 5 ppm	300 series brass regulator
			Nitrogen	< 20 ppm	
			CO/CO ₂	< 10 ppm	
			Other Halocarbons	< 5 ppm	
			Sulfur Hexafluoride	< 5 ppm	
			Moisture	< 3 ppm	
			Acidity (as HF)	< 0.01 ppmw	

Xenon

Grade	Part Number	Purity	Impurity	Specification	Equipment Recommended
PurityPlus 5.0 (Research)	XEN-50-XX	99.999%	Krypton		400 series brass regulator
			Moisture		
			Hydrogen		
			Oxygen		
			Nitrogen		
			Nitrous Oxide		
			Total Hydrocarbons		
			Tetrafluoromethane		
			Carbon Dioxide		
			Hexafluoroethane		
			Total Impurities	< 10 ppm	

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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MIXED GASES



Mixed Gases

Ammonia, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	0.1–4%	200	214	2000	400 series stainless steel regulator	705
			150AL	144	2000		
Certified	CS-2-AIR-XX-DN	10–99 ppm	150AL	144	2000	400 series stainless steel regulator	705
			35AL	29	2000		
		100–999 ppm	150AL	144	2000		
			35AL	29	2000		
		0.1–4%	200	214	2000		
			150AL	144	2000		
			35AL	29	2000		

Ammonia, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	0.1–4%	200	208	2000	400 series stainless steel regulator	705
			150AL	140	2000		
Certified	CS-2-NIT-XX-DN	10–99 ppm	150AL	140	2000	400 series stainless steel regulator	705
			35AL	28	2000		
		100–999 ppm	150AL	140	2000		
			35AL	28	2000		
		0.1–4%	200	208	2000		
			150AL	140	2000		
			35AL	28	2000		

Argon, in Helium

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HEL-XX-DN	100 ppm–50%	200	200	2000	300 series brass regulator	580

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Argon, in Helium (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Certified	CS-2-HEL-XX-DN	1-49 ppm	200	200	2000	300 series brass regulator	580
			80	73	2000		
		50-999 ppm	200	200	2000		
			80	73	2000		
		0.1-50%	80	73	2000		
			35	32	2000		
			200	200	2000		
			80	73	2000		
			35	32	2000		
Custom	CM-2-HEL-XX-DN	50-999 ppm	200	200	2000	300 series brass regulator	580
			80	73	2000		
			35	32	2000		
		0.1-50%	200	200	2000		
			80	73	2000		
			35	32	2000		

Argon, in Hydrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HYD-XX-DN	100 ppm-50%	200	197	2000	300 series brass regulator	350
Certified	CS-2-HYD-XX-DN	1-49 ppm	200	197	2000	300 series brass regulator	350
			80	72	2000		
		50-999 ppm	35	31	2000		
			200	197	2000		
		0.1-50%	80	72	2000		
			35	31	2000		
			200	197	2000		
			80	72	2000		
			35	31	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Argon, in Hydrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-HYD-XX-DN	50-999 ppm	200	197	2000	300 series brass regulator	350
			80	72	2000		
			35	31	2000		
		0.1-50%	200	197	2000		
			80	72	2000		
			35	31	2000		

Argon, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	100 ppm-50%	200	208	2000	300 series brass regulator	580
Certified	CS-2-NIT-XX-DN	1-49 ppm	200	208	2000	300 series brass regulator	580
			80	76	2000		
		50-999 ppm	35	32	2000		
			200	208	2000		
		0.1-50%	80	76	2000		
			35	32	2000		
			200	208	2000		
			80	76	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	50-999 ppm	200	208	2000	300 series brass regulator	580
			80	76	2000		
			35	32	2000		
		0.1-50%	200	208	2000		
			80	76	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Argon, in Oxygen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-OXY-XX-DN	100 ppm–50%	200	226	2000	300 series brass regulator	296
Certified	CS-2-OXY-XX-DN	1–49 ppm	200	226	2000	300 series brass regulator	296
			80	83	2000		
		50–999 ppm	35	35	2000		
			200	226	2000		
		0.1–50%	80	83	2000		
			35	35	2000		
			200	226	2000		
			80	83	2000		
			35	35	2000		
Custom	CM-2-OXY-XX-DN	50–999 ppm	200	226	2000	300 series brass regulator	296
			80	83	2000		
			35	35	2000		
		0.1–50%	200	226	2000		
			80	83	2000		
			35	35	2000		

n-Butane, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	50 ppm–0.9%	200	214	2000	300 series brass regulator	590
Certified	CS-2-AIR-XX-DN	100–999 ppb	150AL	144	2000	300 series brass regulator	590
			35AL	29	2000		
		1–49 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		0.1–0.9%	200	214	2000		
			80	78	2000		
			35	33	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

n-Butane, in Air (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-AIR-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		0.1–0.9%	200	214	2000		
			80	78	2000		
			35	33	2000		

n-Butane, in Helium

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HEL-XX-DN	50 ppm–0.9%	200	200	2000	300 series brass regulator	350
Certified	CS-2-HEL-XX-DN	100–999 ppb	150AL	135	2000	300 series brass regulator	350
			35AL	27	2000		
		1–49 ppm	200	200	2000		
			80	73	2000		
			35	32	2000		
		50–999 ppm	200	200	2000		
			80	73	2000		
			35	32	2000		
		0.1–0.9%	200	200	2000		
			80	73	2000		
			35	32	2000		
Custom	CM-2-HEL-XX-DN	50–999 ppm	200	200	2000	300 series brass regulator	350
			80	73	2000		
			35	32	2000		
		0.1–0.9%	200	200	2000		
			80	73	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

n-Butane, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	50 ppm–0.9%	200	208	2000	300 series brass regulator	350
Certified	CS-2-NIT-XX-DN	100–999 ppb	150AL	140	2000	300 series brass regulator	350
			35AL	28	2000		
		1–49 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		50–999 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		0.1–0.9%	200	208	2000		
			80	76	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	50–999 ppm	200	208	2000	300 series brass regulator	350
			80	76	2000		
			35	32	2000		
		0.1–0.9%	200	208	2000		
			80	76	2000		
			35	32	2000		

Carbon Dioxide, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	50 ppm–30%	200	214	2000	300 series brass regulator	590

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Carbon Dioxide, in Air (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Certified	CS-2-AIR-XX-DN	1–99 ppm	200	214	2000	300 series brass regulator	590
			150AL	144	2000		
			80	78	2000		
			35	33	2000		
		100–999 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		0.1–30%	200	214	2000		
			80	78	2000		
			35	33	2000		
Custom	CM-2-AIR-XX-DN	100–999 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		0.1–30%	200	214	2000		
			80	78	2000		
			35	33	2000		

Carbon Dioxide, in Helium

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HEL-XX-DN	50 ppm–30%	200	200	2000	300 series brass regulator	580
Certified	CS-2-HEL-XX-DN	1–99 ppm	200	200	2000	300 series brass regulator	580
			150AL	135	2000		
			80	73	2000		
			35	32	2000		
			35AL	27	2000		
		100–999 ppm	200	200	2000		
			80	73	2000		
			35	32	2000		
		0.1–30%	200	200	2000		
			80	73	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Carbon Dioxide, in Helium (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-HEL-XX-DN	100–999 ppm	200	200	2000	300 series brass regulator	580
			80	73	2000		
			35	32	2000		
		0.1–30%	200	200	2000		
			80	73	2000		
			35	32	2000		

Carbon Dioxide, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	50 ppm–30%	200	208	2000	300 series brass regulator	580
Certified	CS-2-NIT-XX-DN	1–99 ppm	200	208	2000	300 series brass regulator	580
			150AL	140	2000		
			80	76	2000		
			35	32	2000		
			35AL	28	2000		
		100–999 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		0.1–30%	200	208	2000		
			80	76	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	100–999 ppm	200	208	2000	300 series brass regulator	580
			80	76	2000		
			35	32	2000		
		0.1–30%	200	208	2000		
			80	76	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Carbon Dioxide, in Oxygen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	50 ppm–30%	200	226	2000	300 series brass regulator	296
Certified	CS-2-NIT-XX-DN	1–99 ppm	200	226	2000	300 series brass regulator	296
			150AL	152	2000		
			80	83	2000		
			35	35	2000		
			35AL	30	2000		
		100–999 ppm	200	226	2000		
			80	83	2000		
			35	35	2000		
		0.1–30%	200	226	2000		
			80	83	2000		
			35	35	2000		
Custom	CM-2-NIT-XX-DN	100–999 ppm	200	226	2000	300 series brass regulator	296
			80	83	2000		
			35	35	2000		
		0.1–30%	200	226	2000		
			80	83	2000		
			35	35	2000		

Carbon Monoxide, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	1–9 ppm	150AL	144	2000	300 series brass regulator	590
		10–999 ppm	150AL	144	2000		
		0.1–4%	200	177	1650		
Certified	CS-2-AIR-XX-DN	0.5–9.9 ppm	150AL	144	2000	300 series brass regulator	590
			35AL	29	2000		
		10–999 ppm	150AL	144	2000		
			35AL	30	2000		
		0.1–4%	200	177	1650		
			80	64	1650		
			35	28	1650		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Carbon Monoxide, in Air (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-AIR-XX-DN	0.1–4%	200	177	1650	300 series brass regulator	590
			80	64	1650		
			35	28	1650		

Carbon Monoxide, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	1–9 ppm	150AL	140	2000	300 series brass regulator	350
		10–999 ppm	150AL	144	2000		
		0.1–4%	200	173	1650		
Certified	CS-2-NIT-XX-DN	0.5–9.9 ppm	150AL	140	2000	300 series brass regulator	350
			35AL	28	2000		
		10–999 ppm	150AL	140	2000		
			35AL	28	2000		
		0.1–9.9%	200	173	1650		
			80	64	1650		
			35	28	1650		
		10–50%	200	173	1650		
			80	64	1650		
			35	28	1650		
Custom	CM-2-NIT-XX-DN	0.1–9.9%	200	177	1650	300 series brass regulator	350
			80	64	1650		
			35	28	1650		
		10–50%	200	177	1650		
			80	64	1650		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

This **Specialty Gas Monitoring** catalog is based on the **PurityPlus Specialty Gases & Equipment Catalog**. **Part Number** refers to the PurityPlus part number, with "XX" referring to the cylinder size.

Mixed Gases

Ethane, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	50 ppm~1.5%	200	214	2000	300 series brass regulator	350
Certified	CS-2-AIR-XX-DN	100~999 ppb	150AL	144	2000	300 series brass regulator	350
			35AL	29	2000		
		1~49 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		50~999 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		0.1~1.5%	200	214	2000		
			80	78	2000		
			35	33	2000		
Custom	CM-2-AIR-XX-DN	50~999 ppm	200	214	2000	300 series brass regulator	350
			80	78	2000		
			35	33	2000		
		0.1~1.5%	200	214	2000		
			80	78	2000		
			35	33	2000		

Ethane, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	50 ppm~1.5%	200	208	2000	300 series brass regulator	590

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Ethane, in Nitrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Certified	CS-2-NIT-XX-DN	100–999 ppb	150AL	140	2000	300 series brass regulator	590
			35AL	28	2000		
		1–49 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		50–999 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		0.1–1.5%	200	208	2000		
			80	76	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	50–999 ppm	200	208	2000	300 series brass regulator	590
			80	76	2000		
			35	32	2000		
		0.1–1.5%	200	208	2000		
			80	76	2000		
			35	32	2000		

Ethylene, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	10–49 ppm	200	214	2000	300 series brass regulator	590
		50 ppm–1.55%	200	214	2000		
Certified	CS-2-AIR-XX-DN	100–999 ppb	150AL	144	2000	300 series brass regulator	590
			35AL	29	2000		
		1–49 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		0.1–1.55%	200	214	2000		
			80	78	2000		
			35	33	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Ethylene, in Air (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-AIR-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		0.1–1.5%	200	214	2000		
			80	78	2000		
			35	33	2000		

Ethylene, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	10–49 ppm	200	214	2000	300 series brass regulator	350
		50 ppm–50%	200	214	2000		
Certified	CS-2-NIT-XX-DN	100–999 ppb	150AL	144	2000	300 series brass regulator	350
			35AL	29	2000		
		1–49 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		0.1–50%	200	214	2000		
			80	78	2000		
			35	33	2000		
Custom	CM-2-NIT-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	350
			80	78	2000		
			35	33	2000		
		0.1–50%	200	214	2000		
			80	78	2000		
			35	33	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Helium, in Argon

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-ARG-XX-DN	50 ppm–50%	200	226	2000	300 series brass regulator	580
Certified	CS-2-ARG-XX-DN	1–49 ppm	200	226	2000	300 series brass regulator	580
			80	83	2000		
			35	35	2000		
		50–999 ppm	200	226	2000		
			80	83	2000		
			35	35	2000		
		0.1–50%	200	226	2000		
			80	83	2000		
			35	35	2000		
Custom	CM-2-ARG-XX-DN	50–999 ppm	200	226	2000	300 series brass regulator	580
			80	83	2000		
			35	35	2000		
		0.1–50%	200	226	2000		
			80	83	2000		
			35	35	2000		

Helium, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	50 ppm–50%	200	208	2000	300 series brass regulator	580
Certified	CS-2-NIT-XX-DN	1–49 ppm	200	208	2000	300 series brass regulator	580
			80	76	2000		
			35	32	2000		
		50–999 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		0.1–50%	200	208	2000		
			80	76	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Helium, in Nitrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-NIT-XX-DN	50-999 ppm	200	208	2000	300 series brass regulator	580
			80	76	2000		
			35	32	2000		
		0.1-50%	200	208	2000		
			80	76	2000		
			35	32	2000		

Hexane, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	10-49 ppm	200	214	2000	300 series brass regulator	580
		50-700 ppm	200	214	2000		
Certified	CS-2-AIR-XX-DN	100-999 ppb	150AL	144	2000	300 series brass regulator	580
			35AL	29	2000		
		1-99 ppm	200	214	2000		
			35	33	2000		
		100-700 ppm	200	214	2000		
			35	33	2000		
Custom	CM-2-AIR-XX-DN	100-700 ppm	200	214	2000	300 series brass regulator	580
			35	33	2000		

Hexane, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	10-49 ppm	200	208	2000	300 series brass regulator	350
		50-700 ppm	200	208	2000		
Certified	CS-2-NIT-XX-DN	100-999 ppb	150AL	140	2000	300 series brass regulator	350
			35AL	28	2000		
		1-99 ppm	200	208	2000		
			35	32	2000		
		100-700 ppm	200	208	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Hexane, in Nitrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-NIT-XX-DN	100–700 ppm	200	208	2000	300 series brass regulator	350
			35	32	2000		

Hydrogen, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	10 ppm–0.1%	150AL	144	2000	300 series brass regulator	590
		0.1–2.0%	200	214	2000		
Certified	CS-2-AIR-XX-DN	5–49 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		0.1–2.0%	200	214	2000		
			80	78	2000		
			35	33	2000		
Custom	CM-2-AIR-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		0.1–2.0%	200	214	2000		
			80	78	2000		
			35	33	2000		

Hydrogen, in Argon

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-ARG-XX-DN	0.1–50%	200	226	2000	300 series brass regulator	350

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Hydrogen, in Argon (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Certified	CS-2-ARG-XX-DN	5-49 ppm	200	226	2000	300 series brass regulator	350
			80	83	2000		
			35	35	2000		
		50-999 ppm	200	226	2000		
			80	83	2000		
			35	35	2000		
		0.1-50%	200	226	2000		
			80	83	2000		
Custom	CM-2-ARG-XX-DN		35	35	2000	300 series brass regulator	350
		50-999 ppm	200	226	2000		
			80	83	2000		
			35	35	2000		
		0.1-50%	200	226	2000		
			80	83	2000		
			35	35	2000		
			35	35	2000		

Hydrogen, in Helium

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HEL-XX-DN	0.1-50%	200	200	2000	300 series brass regulator	350
Certified	CS-2-HEL-XX-DN	5-49 ppm	200	200	2000	300 series brass regulator	350
			150AL	135	2000		
			80	73	2000		
			35	32	2000		
			35AL	27	2000		
		50-999 ppm	200	200	2000		
			80	73	2000		
			35	32	2000		
		0.1-50%	200	200	2000		
			80	73	2000		
			35	32	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Hydrogen, in Helium (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-HEL-XX-DN	50–999 ppm	200	200	2000	300 series brass regulator	350
			80	73	2000		
			35	32	2000		
		0.1–50%	200	200	2000		
			80	73	2000		

Hydrogen, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	10 ppm–0.1%	200	208	2000	300 series brass regulator	350
Certified	CS-2-NIT-XX-DN	5–49 ppm	200	208	2000	300 series brass regulator	350
			80	76	2000		
			35	32	2000		
		50–999 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		0.1–2.0%	200	208	2000		
			80	76	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	50–999 ppm	200	208	2000	300 series brass regulator	350
			80	76	2000		
			35	32	2000		
		0.1–50%	200	208	2000		
			80	76	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Hydrogen Sulfide, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	10 ppm–0.5%	150AL	140	2000	400 series stainless steel regulator	350
Certified	CS-2-NIT-XX-DN	0.5–9.9 ppm	150AL	140	2000	400 series stainless steel regulator	350
		10–50 ppm	150AL	140	2000		
		51–99 ppm	150AL	140	2000		
			35AL	28	2000		
		100 ppm–0.49%	150AL	140	2000		
			35AL	28	2000		
		0.5–1.0%	200	208	2000		
			150AL	140	2000		
			35AL	28	2000		

Isobutane, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	10–49 ppm	200	214	2000	300 series brass regulator	590
		50 ppm–0.9%	200	214	2000		
Certified	CS-2-AIR-XX-DN	100–999 ppb	150AL	144	2000	300 series brass regulator	590
			35AL	29	2000		
		1–49 ppm	200	214	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			35	33	2000		
		0.1–0.9%	200	214	2000		
			35	33	2000		
Custom	CM-2-AIR-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	590
			35	33	2000		
		0.1–0.9%	200	214	2000		
			35	33	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Isobutane, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	10–49 ppm	200	208	2000	300 series brass regulator	350
		50 ppm–1.0%	200	208	2000		
Certified	CS-2-NIT-XX-DN	100–999 ppb	150AL	140	2000	300 series brass regulator	350
			35AL	28	2000		
		1–49 ppm	200	208	2000		
			35	32	2000		
		50–999 ppm	200	208	2000		
			35	32	2000		
		0.1–1.0%	200	208	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	50–999 ppm	200	208	2000	300 series brass regulator	350
			35	32	2000		
		0.1–1.0%	200	208	2000		
			35	32	2000		

Methane, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	10 ppm–2.5%	200	214	2000	300 series brass regulator	590
Certified	CS-2-AIR-XX-DN	1–49 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		0.1–2.5%	200	214	2000		
			80	78	2000		
			35	33	2000		
Custom	CM-2-AIR-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		0.1–2.5%	200	214	2000		
			80	78	2000		
			35	33	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Methane, in Argon

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-ARG-XX-DN	1–49 ppm	200	226	2000	300 series brass regulator	350
		50 ppm–50%	200	226	2000		
Certified	CS-2-ARG-XX-DN	1–49 ppm	200	226	2000	300 series brass regulator	350
			80	83	2000		
			35	35	2000		
		50–999 ppm	200	226	2000		
			80	83	2000		
			35	35	2000		
		0.1–50%	200	226	2000		
			80	83	2000		
			35	35	2000		
Custom	CM-2-ARG-XX-DN	50–999 ppm	200	226	2000	300 series brass regulator	350
			80	83	2000		
			35	35	2000		
		0.1–50%	200	226	2000		
			80	83	2000		
			35	35	2000		

Methane, in Hydrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HYD-XX-DN	1–49 ppm	200	197	2000	300 series brass regulator	350
		50 ppm–50%	200	197	2000		
Certified	CS-2-HYD-XX-DN	1–49 ppm	200	197	2000	300 series brass regulator	350
			80	72	2000		
			35	31	2000		
		50–999 ppm	200	197	2000		
			80	72	2000		
			35	31	2000		
		0.1–50%	200	197	2000		
			80	72	2000		
			35	31	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Methane, in Hydrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-HYD-XX-DN	50-999 ppm	200	197	2000	300 series brass regulator	350
			80	72	2000		
			35	31	2000		
		0.1-50%	200	197	2000		
			80	72	2000		
			35	31	2000		

Methane, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	1-9 ppm	200	208	2000	300 series brass regulator	350
		10 ppm-50%	200	208	2000		
Certified	CS-2-NIT-XX-DN	1-49 ppm	200	208	2000	300 series brass regulator	350
			80	76	2000		
			35	32	2000		
		50-999 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		0.1-50%	200	208	2000		
			80	76	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	50-999 ppm	200	208	2000	300 series brass regulator	350
			80	76	2000		
			35	32	2000		
		0.1-50%	200	208	2000		
			80	76	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Nitrogen, in Argon

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-ARG-XX-DN	200 ppm–50%	200	226	2000	300 series brass regulator	580
Certified	CS-2-ARG-XX-DN	1–49 ppm	200	226	2000	300 series brass regulator	580
			80	83	2000		
			35	35	2000		
		50–999 ppm	200	226	2000		
			80	83	2000		
			35	35	2000		
		0.1–50%	200	226	2000		
			80	83	2000		
			35	35	2000		
Custom	CM-2-ARG-XX-DN	50–999 ppm	200	226	2000	300 series brass regulator	580
			80	83	2000		
			35	35	2000		
		0.1–50%	200	226	2000		
			80	83	2000		

Nitrogen, in Helium

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HEL-XX-DN	200 ppm–50%	200	200	2000	300 series brass regulator	580
Certified	CS-2-HEL-XX-DN	1–49 ppm	200	200	2000	300 series brass regulator	580
			80	73	2000		
			35	32	2000		
		50–999 ppm	200	200	2000		
			80	73	2000		
			35	32	2000		
		0.1–50%	200	200	2000		
			80	73	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Nitrogen, in Helium (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-HEL-XX-DN	50–999 ppm	200	200	2000	300 series brass regulator	580
			80	73	2000		
			35	32	2000		
		0.1–50%	200	200	2000		
			80	73	2000		

Nitrogen, in Hydrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HYD-XX-DN	200 ppm–50%	200	197	2000	300 series brass regulator	350
Certified	CS-2-HYD-XX-DN	1–49 ppm	200	197	2000	300 series brass regulator	350
			80	72	2000		
			35	31	2000		
		50–999 ppm	200	197	2000		
			80	72	2000		
			35	31	2000		
		0.1–50%	200	197	2000		
			80	72	2000		
			35	31	2000		
Custom	CM-2-HYD-XX-DN	50–999 ppm	200	197	2000	300 series brass regulator	350
			80	72	2000		
			35	31	2000		
		0.1–50%	200	197	2000		
			80	72	2000		
			35	31	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Nitrogen Dioxide, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	500 ppm–1.0%	150AL	144	2000	400 series stainless steel regulator	660
Certified	CS-2-AIR-XX-DN	1–19.9 ppm	150AL	144	2000	400 series stainless steel regulator	660
			35AL	29	2000		
		20–999 ppm	150AL	144	2000		
			35AL	29	2000		
		0.1–1.0%	200	214	2000		
			150AL	144	2000		
			35AL	29	2000		

Nitrogen Dioxide, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	500 ppm–2.2%	150AL	140	2000	400 series stainless steel regulator	660
Certified	CS-2-NIT-XX-DN	1–19.9 ppm	150AL	140	2000	400 series stainless steel regulator	660
			35AL	28	2000		
		20–999 ppm	150AL	140	2000		
			35AL	28	2000		
		0.1–2.2%	200	208	2000		
			150AL	140	2000		
			35AL	28	2000		

Nitrous Oxide, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	50 ppm–50%	200	208	2000	300 series brass regulator	590

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Mixed Gases

Nitrous Oxide, in Nitrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Certified	CS-2-NIT-XX-DN	1-99 ppm	200	208	2000	300 series brass regulator	590
			150AL	140	2000		
			80	76	2000		
			35	32	2000		
			35AL	28	2000		
		100-9999 ppm	200	208	2000		
			150AL	140	2000		
			80	76	2000		
			35	32	2000		
			35AL	28	2000		
		1-50%	200	208	2000		
			80	76	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	100-9999 ppm	200	208	2000	300 series brass regulator	590
			150AL	140	2000		
			80	76	2000		
			35	32	2000		
			35AL	28	2000		
		0.1-50%	200	208	2000		
			80	76	2000		
			35	32	2000		

Oxygen, in Argon

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-ARG-XX-DN	100-999 ppm	150AL	152	2000	300 series brass regulator	Varies with Oxygen concentration
		0.1-50%	200	226	2000		
Certified	CS-2-ARG-XX-DN	1-49 ppm	150AL	152	2000	300 series brass regulator	Varies with Oxygen concentration
			35AL	30	2000		
		50-999 ppm	150AL	152	2000		
			35AL	30	2000		
		0.1-50%	200	226	2000		
			80	83	2000		
			35	35	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Mixed Gases

Oxygen, in Argon (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-ARG-XX-DN	0.1–50%	200	226	2000	300 series brass regulator	Varies with Oxygen concentration
			80	83	2000		
			35	35	2000		

Oxygen, in Helium

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-HEL-XX-DN	100–999 ppm	150AL	135	2000	300 series brass regulator	Varies with Oxygen concentration
		0.1–50%	200	200	2000		
Certified	CS-2-HEL-XX-DN	1–49 ppm	150AL	135	2000	300 series brass regulator	Varies with Oxygen concentration
			35AL	27	2000		
		50–999 ppm	150AL	135	2000		
			35AL	27	2000		
		0.1–50%	200	200	2000		
			80	73	2000		
			35	32	2000		
Custom	CM-2-HEL-XX-DN	0.1–50%	200	200	2000	300 series brass regulator	Varies with Oxygen concentration
			80	73	2000		
			35	32	2000		

Oxygen, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	100–999 ppm	150AL	140	2000	300 series brass regulator	Varies with Oxygen concentration
		0.1–50%	200	208	2000		
Certified	CS-2-NIT-XX-DN	1–49 ppm	150AL	140	2000	300 series brass regulator	Varies with Oxygen concentration
			35AL	28	2000		
		50–999 ppm	150AL	140	2000		
			35AL	28	2000		
		0.1–50%	200	208	2000		
			80	76	2000		
			35	32	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Oxygen, in Nitrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-NIT-XX-DN	0.1–50%	200	208	2000	300 series brass regulator	Varies with Oxygen concentration
			80	76	2000		
			35	32	2000		

Propane, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	1–9.9 ppm	200	214	2000	300 series brass regulator	590
		10 ppm–1.05%	200	214	2000		
Certified	CS-2-AIR-XX-DN	100–999 ppb	150AL	144	2000	300 series brass regulator	590
			35AL	29	2000		
		1–49 ppm	200	214	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			35	33	2000		
		0.1–1.05%	200	214	2000		
			35	33	2000		
Custom	CM-2-AIR-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	590
			35	33	2000		
		0.1–1.05%	200	214	2000		
			35	33	2000		

Propane, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	1–9.9 ppm	200	208	2000	300 series brass regulator	350
		10 ppm–4%	200	208	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
	Contact Process Insights to discuss

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Mixed Gases

Propane, in Nitrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Certified	CS-2-NIT-XX-DN	100–999 ppb	150AL	140	2000	300 series brass regulator	350
			35AL	28	2000		
		1–49 ppm	200	208	2000		
			35	32	2000		
		50–999 ppm	200	208	2000		
			35	32	2000		
		0.1–4%	200	208	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	50–999 ppm	200	208	2000	300 series brass regulator	350
			35	32	2000		
		0.1–4%	200	208	2000		
			35	32	2000		

Propylene, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	1–9.9 ppm	200	214	2000	300 series brass regulator	590
		10–49 ppm	200	214	2000		
		50 ppm–1.2%	200	214	2000		
Certified	CS-2-AIR-XX-DN	100–999 ppb	150AL	144	2000	300 series brass regulator	590
			35AL	29	2000		
		1–49 ppm	200	214	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			35	33	2000		
		0.1–1.2%	200	214	2000		
			35	33	2000		
Custom	CM-2-AIR-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	590
			35	33	2000		
		0.1–1.2%	200	214	2000		
			35	33	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Mixed Gases

Propylene, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	1–9.9 ppm	200	208	2000	300 series brass regulator	350
		10–49 ppm	200	208	2000		
		50 ppm–6%	200	208	2000		
Certified	CS-2-NIT-XX-DN	100–999 ppb	150AL	140	2000	300 series brass regulator	350
			35AL	28	2000		
		1–49 ppm	200	208	2000		
			35	32	2000		
		50–999 ppm	200	208	2000		
			35	32	2000		
		0.1–6%	200	208	2000		
			35	32	2000		
Custom	CM-2-NIT-XX-DN	50–999 ppm	200	208	2000	300 series brass regulator	350
			35	32	2000		
		0.1–6%	200	208	2000		
			35	32	2000		

Sulfur Dioxide, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	100 ppm–1%	150AL	144	2000	400 series stainless steel regulator	660
Certified	CS-2-AIR-XX-DN	0.4–9.9 ppm	150AL	144	2000	400 series stainless steel regulator	660
		10–99 ppm	150AL	144	2000		
			35AL	29	2000		
		100–999 ppm	150AL	144	2000		
			35AL	29	2000		
		0.1–1%	200	214	2000		
			150AL	144	2000		
			35AL	29	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Mixed Gases

Sulfur Dioxide, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	100 ppm–1%	150AL	140	2000	400 series stainless steel regulator	660
Certified	CS-2-NIT-XX-DN	0.4–9.9 ppm	150AL	140	2000	400 series stainless steel regulator	660
		10–99 ppm	150AL	140	2000		
			35AL	28	2000		
		100–999 ppm	150AL	140	2000		
			35AL	28	2000		
		0.1–1%	200	208	2000		
			150AL	140	2000		
			35AL	28	2000		

Sulfur Hexafluoride, in Air

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-AIR-XX-DN	50 ppm–0.9%	200	214	2000	300 series brass regulator	590
		1.0–4.9%	200	214	2000		
		5–10%	200	214	2000		
Certified	CS-2-AIR-XX-DN	1–49 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		50–999 ppm	200	214	2000		
			80	78	2000		
			35	33	2000		
		0.1–0.9%	200	214	2000		
			80	78	2000		
			35	33	2000		
		1.0–4.9%	200	214	2000		
			80	78	2000		
			35	33	2000		
		5–10%	200	214	2000		
			80	78	2000		
			35	33	2000		

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Mixed Gases

Sulfur Hexafluoride, in Air (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-AIR-XX-DN	50–999 ppm	200	214	2000	300 series brass regulator	590
			80	78	2000		
			35	33	2000		
		0.1–0.9%	200	214	2000		
			80	78	2000		
			35	33	2000		
		1.0–4.9%	200	214	2000		
			80	78	2000		
			35	33	2000		
		5–10%	200	214	2000		
			80	78	2000		
			35	33	2000		

Sulfur Hexafluoride, in Nitrogen

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Primary	PS-2-NIT-XX-DN	50 ppm–0.9%	200	208	2000	300 series brass regulator	350
		1.0–4.9%	200	208	2000		
		5–10%	200	208	2000		
Certified	CS-2-NIT-XX-DN	1–49 ppm	200	208	2000	300 series brass regulator	350
			80	76	2000		
			35	32	2000		
		50–999 ppm	200	208	2000		
			80	76	2000		
			35	32	2000		
		0.1–0.9%	200	208	2000		
			80	76	2000		
			35	32	2000		
		1.0–4.9%	200	208	2000		
			80	76	2000		
			35	32	2000		
		5–10%	200	208	2000		
			80	76	2000		
			35	32	2000		

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Mixed Gases

Sulfur Hexafluoride, in Nitrogen (continued)

Grade	Part Number	Concentration	Cylinder Size	Contents cu.ft.	Pressure psig @ 70°F	Equipment Recommended	CGA Valve Connection
Custom	CM-2-NIT-XX-DN	50-999 ppm	200	208	2000	300 series brass regulator	350
			80	76	2000		
			35	32	2000		
		0.1-0.9%	200	208	2000		
			80	76	2000		
			35	32	2000		
		1.0-4.9%	200	208	2000		
			80	76	2000		
			35	32	2000		
		5-10%	200	208	2000		
			80	76	2000		
			35	32	2000		

Multi-Component Mixtures

Monitoring of Primary Standard, Certified Standard, and Custom Mixture grades is available. Each gas composition will need to be reviewed individually for composition expectations in order to provide lower detection limit capabilities and analytical tolerances.

Listed below are common minor components in a variety of balance gases. For additional components, or for components not listed in the tables, contact the Process Insights Team today!

Minor Components			
Argon	Ethane	Isobutane	Oxygen
Butane	Ethylene	Methane	Propane
Carbon Dioxide	Helium	Nitrogen	Propylene
Carbon Monoxide	Hydrogen	Nitrous Oxide	

Balance Gases	
Air	Nitrogen
Argon	Oxygen
Hydrogen	

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	Measurement possible with Mass Spec
	Measurement possible with either
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Mixed Gases

Multi-Component Hydrocarbon Mixtures

Typical reference standards can include any or all of the following gases:

Argon	2,2 Dimethyl Butane	2-Methylpentane
Benzene	n-Dodecane	3-Methylpentane
1-3 Butadiene	Ethane	Nitrogen
n-Butane	Ethylene	n-Nonane
cis-2-Butene	Helium	n-Octane
trans-2-Butene	n-Heptane	n-Pentene
1-Butene	Hydrogen Sulfide	Propane
Carbon Dioxide	Isobutane	Propylene
Carbon Monoxide	Isobutylene	Neopentane
Cyclohexane	Isopentane	n-Tridecane
Cyclopentane	Isoprene	n-Undecane
n-Decane	Methane	

Semiconductor Gases

Silanes	Dopants	Etchants	Purge Gases	Other
Silane – SiH ₄	Arsine – AsH ₃	Chlorine – Cl ₂	Argon – Ar	Ammonia – NH ₃
Dichlorosilane – SiH ₂ Cl ₂	Phosphine – PH ₃	Hydrogen Bromide – HBr	Helium – He	Carbon Dioxide – CO ₂
Disilane – Si ₂ H ₆	Boron Trifluoride – BF ₃	Hydrogen Chloride – HCl	Hydrogen – H ₂	Nitrous Oxide – N ₂ O
Silicon Tetrachloride – SiCl ₄		Sulfur Hexafluoride – SF ₆	Nitrogen – N ₂	
Trichlorosilane – SiHCl ₃		Halocarbon 14 – CF ₄	Oxygen – O ₂	
		Halocarbon 22 – CHClF ₂		
		Halocarbon 23 – CHF ₃		
		Halocarbon C318 – C ₄ F ₈		

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SPECIAL APPLICATION MIXES



Special Application Mixes

Biological Atmosphere Gas Mixtures

Anaerobic Mixtures	Part Number	Cylinder Size	Contents	Connection
0–5% Hydrogen Balance Carbon Dioxide	BIO-2-CDI-XX-DN	300	100 cf	350
		200	81 cf	350
5–10% Carbon Dioxide 5–10% Hydrogen Balance Nitrogen	BIO-3-NIT-XX-DN	300	276 cf	350
		200	207 cf	350
0.5% Carbon Dioxide Balance Nitrogen	BIO-2-NIT-XX-DN	300	301 cf	580
		200	226 cf	580

Aerobic Mixtures	Part Number	Cylinder Size	Contents	Connection
5–10% Carbon Dioxide Balance Oxygen	BIO-2-OXY-XX-DN	300	293 cf	296
		200	220 cf	296
0.5–10% Carbon Dioxide Balance Air	BIO-2-AIR-XX-DN	300	285 cf	590
		200	214 cf	590

Electron Capture Mixtures

Mixture	Part Number	Cylinder Size	Pressure	Contents	Connection
P-5 Mixture 5% Methane/95% Argon	ECD-2-ARG-XX-DN	300	2400 psig	315 cf	296
		200	2000 psig	232 cf	296
P-10 Mixture 10% Methane/90% Argon	ECD-2-ARG-XX-DN	300	2400 psig	315 cf	590
		200	2000 psig	232 cf	590

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Special Application Mixes

Nuclear Counter Mixtures

Mixture	Part Number	Cylinder Size	Pressure	Contents	Connection
Ultra P-5 5% Methane UHP /95% Argon UHP	NCM-2-ARG-XX-DN	300	2400 psig	315 cf	350
		200	2000 psig	232 cf	350
Ultra P-10 10% Methane UHP /90% Argon UHP	NCM-2-ARG-XX-DN	300	2400 psig	315 cf	350
		200	2000 psig	232 cf	350
Quench Gas 1.3% n-Butane/98.7% Helium	NCM-2-HEL-XX-DN	300	1050 psig	121 cf	350
		200	1050 psig	107 cf	350

Geiger Flow Gases	Part Number	Cylinder Size	Pressure	Contents	Connection
0.95% Isobutane 99.05% Helium	NCM-2-HEL-XX-DN	300	2400 psig	262 cf	350
		200	2000 psig	197 cf	350
1.5% Propane 98.5% Helium	NCM-2-HEL-XX-DN	300	2400 psig	262 cf	350
		200	2000 psig	197 cf	350

EPA Protocol Mixtures

Minor Component/ Balance Gas	Part Number	Connection	Minor Component/ Balance Gas	Part Number	Connection
CO₂ in Air	EPA-2-AIR-XX-DN	590	NO in N₂	EPA-2-NIT-XX-DN	660
1–20% CO ₂ /Air			0.5–1% NO/N ₂		
300–9999 ppm CO ₂ /Air			100–4999 ppm NO/N ₂		
100–299 ppm CO ₂ /Air			30–99 ppm NO/N ₂		
CO₂ in N₂	EPA-2-NIT-XX-DN	580	10–29.9 ppm NO/N ₂		
1–20% CO ₂ /N ₂			5–9.9 ppm NO/N ₂		
300–2999 ppm CO ₂ /N ₂			1–4.9 ppm NO/N ₂		
100–299 ppm CO ₂ /N ₂			NOx in Air	EPA-2-AIR-XX-DN	660
CO in Air	EPA-2-AIR-XX-DN	590	500–5000 ppm NOx/Air		
1–3% CO/Air			100–499 ppm NOx/Air		
100–9999 ppm CO/Air			80–99 ppm NOx/Air		
10–99 ppm CO/Air			5–29.9 ppm NOx/Air		
8–9.9 ppm CO/Air			1–4.9 ppm NOx/Air		

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Special Application Mixes

EPA Protocol Mixtures (continued)

Minor Component/ Balance Gas	Part Number	Connection	Minor Component/ Balance Gas	Part Number	Connection
CO in N₂	EPA-2-NIT-XX-DN	350	O₂ in N₂	EPA-2-NIT-XX-DN	<23% O ₂ – 590 >23% O ₂ – 296
1–10% CO/N ₂			23–49% O ₂ /N ₂		
100–9999 ppm CO/N ₂			5–22.9% O ₂ /N ₂		
10–99 ppm CO/N ₂			0.8–4.9% O ₂ /N ₂		
8–9.9 ppm CO/N ₂			C₃H₈ in Air	EPA-2-AIR-XX-DN	590
0.5–7.9 ppm CO/N ₂			1000–6000 ppm C ₃ H ₈ /Air		
H₂S in Air	EPA-2-AIR-XX-DN	330	100–999 ppm C ₃ H ₈ /Air		
100–999 ppm H ₂ S/Air			1–99 ppm C ₃ H ₈ /Air		
10–99 ppm H ₂ S/Air			C₃H₈ in N₂	EPA-2-NIT-XX-DN	350
1–9.9 ppm H ₂ S/Air			1000 ppm C ₃ H ₈ /N ₂		
H₂S in N₂	EPA-2-NIT-XX-DN	330	100–999 ppm C ₃ H ₈ /N ₂		
100–999 ppm H ₂ S/N ₂			1–99 ppm C ₃ H ₈ /N ₂		
10–99 ppm H ₂ S/N ₂			SO₂ in Air	EPA-2-AIR-XX-DN	660
4–9.9 ppm H ₂ S/N ₂			500–4999 ppm SO ₂ /Air		
1–3.9 ppm H ₂ S/N ₂			100–499 ppm SO ₂ /Air		
CH₄ in Air	EPA-2-AIR-XX-DN	590	40–99 ppm SO ₂ /Air		
> 1 ppm CH ₄ /Air			10–39 ppm SO ₂ /Air		
< 1 ppm CH ₄ /Air			SO₂ in N₂	EPA-2-NIT-XX-DN	660
CH₄ in N₂	EPA-2-NIT-XX-DN	330	500–4999 ppm SO ₂ /N ₂		
> 1 ppm CH ₄ /N ₂			100–499 ppm SO ₂ /N ₂		
< 1 ppm CH ₄ /N ₂			40–99 ppm SO ₂ /N ₂		
			10–39 ppm SO ₂ /N ₂		

Flame Ionization Fuel Mixtures

FID Fuel	Part Number	Cylinder Size	Contents	Connection
40% Hydrogen 60% Nitrogen	FID-2-NIT-XX-DN	300	266 cf	350
		200	203 cf	350
40% Hydrogen 60% Helium	FID-2-HEL-XX-DN	300	259 cf	350
		200	195 cf	350

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Special Application Mixes

Leak Detection Mixtures

Leak Detection Mixtures	Part Number	Cylinder Size	Contents	Connection
0.5%–10% Helium Balance Nitrogen	LDM-2-NIT-XX-DN	300	285 cf	580
		200	210 cf	580
50 ppm–1% Sulfur Hexafluoride Balance Nitrogen	LDM-2-NIT-XX-DN	300	289 cf	580
		200	213 cf	580
1%–5% Sulfur Hexafluoride Balance Nitrogen	LDM-2-NIT-XX-DN	300	292 cf	580
		200	215 cf	580

Laser Mixtures

Carbon Dioxide Laser Mixtures	Part Number	Cylinder Size	Contents	Connection
3.4% CO ₂ / 15.6% N ₂ / He	LZR-4-HEL-XX-DN	300 200	264 cf 200 cf	580
4.5% CO ₂ / 13.5% N ₂ / He	LZR-4-HEL-XX-DN			
6% CO ₂ / 18% N ₂ / He	LZR-3-HEL-XX-DN			
4.5% CO ₂ / 13.5% N ₂ / He	LZR-3-HEL-XX-DN			
5% CO ₂ / 40% N ₂ / He	LZR-3-HEL-XX-DN			
2% CO / 6% CO ₂ / 6% N ₂ / He	LZR-4-HEL-XX-DN	300 200	229 cf 167 cf	350
2% CO / 8% CO ₂ / 8% N ₂ / He	LZR-4-HEL-XX-DN			
2% CO / 8% CO ₂ / 16% N ₂ / He	LZR-4-HEL-XX-DN			
4% CO / 8% CO ₂ / 16% N ₂ / He	LZR-4-HEL-XX-DN			
4% CO / 8% CO ₂ / 16% He / N ₂	LZR-4-HEL-XX-DN			
4% CO / 8% CO ₂ / 28% He / N ₂	LZR-4-HEL-XX-DN			
0.4% H ₂ / 4% CO / 8% CO ₂ / 8% N ₂ / He	LZR-4-HEL-XX-DN	300 200	229 cf 167 cf	350
0.4% H ₂ / 4% CO / 6% CO ₂ / 12% N ₂ / He	LZR-4-HEL-XX-DN			

TCD Carrier Gas Mixture

TCD Carrier Gas Mixture	Part Number	Cylinder Size	Contents	Connection
8.5% Hydrogen 91.5% Helium	TCD-2-HEL-XX-DN	300	262 cf	350
		200	192 cf	350

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Special Application Mixes

Spark Chamber Mixtures

Spark Chamber Mixtures	Part Number	Cylinder Size	Contents	Connection
10% Helium 90% Neon	SCM-2-NE-XX-DN	300	269 cf	580
		200	201 cf	
		150AL	135 cf	
20% Helium 80% Neon	SCM-2-NE-XX-DN	300	269 cf	580
		200	201 cf	
		150AL	135 cf	
25% Helium 75% Neon	SCM-2-NE-XX-DN	300	269 cf	580
		200	201 cf	
		150AL	135 cf	

Medical Gas

Product	Part Number	Purity	Impurity	Maximum	Cylinder Size	Contents	Connection
Medical Air Purified natural air or a blend of oxygen and nitrogen. Contains 19.5 to 23.5 vol% Oxygen	AIR-USP-XX	Oxygen 19.5–23.5% Bal N ₂	CO	≤ 10 ppm	200	233 cf	346
			CO ₂	≤ 500 ppm	20	23 cf	950
			SO ₂	≤ 5 ppm	10	14 cf	950
			NO + NO ₂	≤ 2.5 ppm			
			Odor:	None			
			Condensed H ₂ O:	None			
			Condensed Oil:	None			
Carbon Dioxide USP Chemical Symbol: CO ₂	CDI-USP-XX	> 99.0%	H ₂ S	≤ 1 ppm	200	64 lbs	320
			CO	≤ 10 ppm	20	6.5 lbs	940
			NO	≤ 2.5 ppm	10	4.0 lbs	940
			NH ₃	≤ 25 ppm			
			SO ₂	≤ 5 ppm			
			H ₂ O	≤ 200 ppm			
			NO ₂	≤ 2.5 ppm			
Carbon Dioxide Cryogenic Liquid					170L	378 lbs	Gas – 320 Liq. – 172
Helium USP	HEL-USP-XX	> 99.0%	CO	≤ 10 ppm	200	218 cf	580
			Air	≤ 1.0%	20	22 cf	930
			Odor:	None	10	13 cf	930

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Special Application Mixes

Medical Gas (continued)

Product	Part Number	Purity	Impurity	Maximum	Cylinder Size	Contents	Connection
Nitrogen NF	NIT-USP-XX	≥ 99.0%	CO	≤ 10 ppm	200	228 cf	580
			O ₂	≤ 1.0%	20	23 cf	960
			Odor:	None	10	14 cf	960
Nitrogen NF Cryogenic Liquid					160L	3690 cf	Gas – 580
					180L	4110 cf	Liq. – 295
Nitrous Oxide USP	N2O-USP-XX	≥ 99.0%	CO	≤ 10 ppm	200	64 lbs	326
			Air	≤ 1.0%	20	6.4 lbs	910
			CO ₂	≤ 300 ppm	10	3.9 lbs	910
			NO	≤ 1 ppm			
			NO ₂	≤ 1 ppm			
			NH ₃	≤ 25 ppm			
			Halogens	≤ 1 ppm			
			H ₂ O	≤ 200 ppm			
Oxygen USP*	OXY-USP-XX	≥ 99.0%	CO	≤ 10 ppm	200	249 cf	540
			CO ₂	≤ 300 ppm	20	25 cf	870
			Odor:	None	10	15 cf	870
Oxygen Cryogenic Liquid					160L	4580 cf	Gas – 540 Liq. – 440

Medical Drug Gases – Therapy	Part Number	Cylinder Size	Contents	Connection
5% Carbon Dioxide in Oxygen	USP-2-OXY-XX-DN	200	226 cf	280
10% Carbon Dioxide in Oxygen	USP-2-OXY-XX-DN	200	226 cf	500
20% Oxygen in Helium	USP-2-HEL-XX-DN	200	199 cf	280
30% Oxygen in Helium	USP-2-HEL-XX-DN	200	199 cf	280

*Oxygen that is produced by the air-liquefaction process is exempt from the requirements of the tests for carbon dioxide and carbon monoxide.

	Measurement possible with CRDS
	Measurement possible with Mass Spec
	Measurement possible with either
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Special Application Mixes

Medical Gas (continued)

Medical Device Gases – Diagnostic – Certified Standards Lung Diffusion Gases	Part Number	Cylinder Size	Contents	Connection
0.3% Carbon Monoxide, 10% Helium, 21% Oxygen in Nitrogen	MDV-4-NIT-XX-DN	200	209 cf	500
0.3% Carbon Monoxide, 0.5% Neon, 21% Oxygen in Nitrogen	MDV-4-NIT-XX-DN	200	213 cf	500
0.3% Carbon Monoxide, 0.3% Methane, 21% Oxygen in Nitrogen	MDV-4-NIT-XX-DN	200	213 cf	500
0.3% Acetylene, 0.3% Carbon Monoxide, 0.3% Methane, 21% Oxygen in Nitrogen	MDV-5-NIT-XX-DN	200	213 cf	500

Medical Device Gases – Diagnostic – Certified Standards Blood Gas Mixtures	Part Number	Cylinder Size	Contents	Connection
2–14% Carbon Dioxide in Nitrogen	MDV-2-NIT-XX-DN	200	228 cf**	500
7–12% Carbon Dioxide in Oxygen		200	233 cf**	500
1–19% Oxygen in Nitrogen		200	228 cf**	500
2–12% Carbon Dioxide, 12–15% Oxygen in Nitrogen	MDV-3-NIT-XX-DN	200	228 cf**	500

**Contents approximate

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	Measurement possible with either
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